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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/715,576	11/17/2000	Hua-Shuang Kong	5000.89A	5716
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EXAMINER

KACKAR, RAM N

ART UNIT

PAPER NUMBER

1763

DATE MAILED: 09/17/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/715,576

Applicant(s)

KONG ET AL.

Examiner

Ram N Kackar

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 24 August 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 22,24,49 and 50 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 22,24,49 and 50 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input checked="" type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. <u>6/15/2004</u> |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)                                   |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

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## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 22, 24 and 49 are rejected under 35 U.S.C. 102(b) as being anticipated by Thomas F Briody (US 3659552).

Thomas F Briody discloses a reactor vessel of quartz (Fig 1-13 and Col 2 lines 38-41) which would make it transparent to electromagnetic radiation, having a gas supply system (29), induction coils as a source of electromagnetic radiation (41), being barrel type (Fig 1), thermally responsive graphite (Col 1 lines 42-54), susceptor (15 and 16), spaced optimally to allow flow of reactive gases as well as allow them to heat each other (Fig 1), and plurality of pocket to receive substrates (Fig 1).

### *Claim Rejections - 35 USC § 103*

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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4. Claims 22, 24 and 49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohmura et al (US 4848272).

Ohmura et al disclose a reactor vessel of quartz (Fig 1-1) which would make it transparent to electromagnetic radiation, having a gas supply system (10), induction coils as a source of electromagnetic radiation (13,14), being barrel type (Fig 1), thermally responsive (Col 1 lines 30-36 and Col 4 line 15-38), susceptor (5), spaced optimally to allow flow of reactive gases as well as allow them to heat each other (Fig 1), and plurality of pocket to receive substrates (Fig 1).

Since both inner and outer susceptors are of thermally responsive material and have reflective surfaces, exclusion of inner susceptor in Ohmura does not materially affect the way invention works except, that the capacity of substrates to be processed reduces.

Therefore it would have been obvious for one of ordinary skill in the art at the time of invention to remove the inner susceptor to reduce cost, since omission of an element with a corresponding omission of function is within the level of ordinary skill. *In re Wilson* 153 USPQ 740 (CCPA 1967); *In re Portz* 145 USPQ 397 (CCPA 1965); *In re Larson* 144 USPQ 347 (CCPA 1965); *In re Karlson* 136 USPQ 184 (CCPA 1963); *In re Listen* 58 USPQ 481 (CCPA 1943); *In re Porter* 20 USPQ 298 (CCPA 1934).

Also, it has been established that economics alone might provide sufficient motivation to one of ordinary skill in the art to depart from the prior art to reduce costs. *In re Farrenkopf* 219 USPQ 1 (Fed. Cir. 1983); *In re Thompson* 193 USPQ 275, 277 (CCPA 1976); *In re Clinton* 188 USPQ 365, 367 (CCPA 1976); *Ex parte Fuller* 172 USPQ 317 (PO BdPatApp 1971).

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5. Claim 50 is rejected under 35 U.S.C. 103(a) as being unpatentable over Thomas F Briody (US 3659552) in view of Martin et al (US 4579080).

Thomas F Briody discloses a reactor vessel containing thermally responsive graphite (Col 1 lines 42-54) but does not disclose graphite coated by silicon carbide.

Since it is well known that uncoated graphite may allow migration of carbon in to silicon substrate, silicon carbide is frequently used to coat graphite.

Martin et al disclose a reactor vessel containing susceptor made of a thermally responsive material, graphite coated with silicon carbide (Col 7 line 60) heated by induction coils as a source of electromagnetic radiation.

Therefore it would have been obvious for one of ordinary skill in the art at the time of invention to coat graphite susceptor of Thomas F Briody by silicon carbide in order to prevent migration of carbon.

#### ***Response to Amendment***

Applicants amendment filed 8/24/2004 have been considered but the arguments are not persuasive.

Applicant argues that the limitation “ the spacing between facing sidewall sections is so unobstructed and so dimensioned that said facing side wall sections to radiantly heat the exposed surface of a facing substrate” in the amended independent claim 49 has not been considered properly while rejecting this claim.

Regarding so called “dimension or spacing” original specification and claims do not indicate if as a result of inventors work, any critical dimensions were discovered which were found better than others in terms of the objective of uniform heating. In Fig 6 pertaining to the

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claimed invention the size and the number of substrates largely determine the spacing and dimension. If any combination of a number of sides, size of wafers or width of sides was found better, the specification is totally silent about that. For heating efficiency it would appear that, within the constraint of the number of wafers per side and number of sides per susceptor the sides should be as close as possible.

On the other hand the prior art of Thomas F Briody discloses all the structural elements claimed. From this, it can be inferred that the apparatus of Briody should function in the same manner. Applicant's argument that sidewalls in Briody are not straight is incorrect (See at Col 1 lines 49-50 "recessed portions within its inner surface, with flat surfaces inclined at a small acute angle"). Regarding the front faces of substrates getting heated through radiation, is inherent.

Regarding the obviousness rejection based on Ohmura, removal of inner susceptor to make it simple would result in the claimed invention since both sides of the substrates would still be heated simultaneously.

### ***Conclusion***

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period

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will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ram N Kackar whose telephone number is 571 272 1436. The examiner can normally be reached on M-F 8:00 A.M to 5:P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory Mills can be reached on 571 272 1439. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

RK

*P. Hassanzadeh  
primary Examiner  
AU 1763*